FORM PTO-1390 (REV 11-98)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER: GARCIA-MARTIN=1

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

U.S APPLICATION NO (If known, see 37 CFR 1 5): 09/581946

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/ES99/00335	20 October 1999	20 October 1998

TITLE OF INVENTION: **DOOR MODULE**

APPLICANT(S) FOR DO/EO/US: **Jose GARCIA-MARTIN et al.**

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☒ has been transmitted by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ have been transmitted by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A FIRST preliminary amendment.
    ☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:

    1. **A courtesy copy of the first page of the International Publication (WO00/23294).**
    2. **Formal drawings, 10 sheets, figures 1-23.**

534 Rec'd PCT/PTO 20 JUN 2000

U.S. APPLICATION NO (if known see 37 CFR 1.5)	INTERNATIONAL APPLICATION NO	ATTORNEY'S DOCKET NUMBER
09/581946	PCT/ES99/00335	GARCIA-MARTIN=1

17. ☒ The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

		CALCULATIONS PTO USE ONLY
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO	$970.00	
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO	$840.00	
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO	$760.00	
International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4)	$670.00	
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4)	$96.00	

ENTER APPROPRIATE BASIC FEE AMOUNT =				$ 970.00	
Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				$	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	17 - 20 =	0	X $18.00	$ 0	
Independent claims	1 - 3 =	0	X $78.00	$ 0	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ $260.00	$	
TOTAL OF ABOVE CALCULATIONS =				$ 970.00	
Reduction of 1/2 for filing by small entity, if applicable. A Small Entity Statement must also by filed (Note 37 CFR 1.9, 1.27, 1.28).				$	
SUBTOTAL =				$ 970.00	
Processing fee of **$130.00** for furnishing the English translation later than ☐20 ☐30 months from the earliest claimed priority date (37 CFR 1.492(f)). +				$	
TOTAL NATIONAL FEE =				$ 970.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property +				$	
TOTAL FEES ENCLOSED =				$ 970.00	
				Amount to be: refunded	$
				charged	$

a. ☐ A check in the amount of $_____ to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of $_____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 02-4035. A duplicate copy of this sheet is enclosed.

[X] **PLEASE CHARGE OUR AMERICAN EXPRESS ACCOUNT (See PTO-2038 attached) IN THE AMOUNT OF $970.00**

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pendin g status.

SEND ALL CORRESPONDENCE TO.

BROWDY AND NEIMARK, P.L.L.C.
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SIGNATURE:

NORMAN J. LATKER
NAME

19,963
REGISTRATION NUMBER

Date of this submission: June 20, 2000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: J. GARCIA-MARTIN et al.	)	Art Unit:
IA No.: PCT/ES99/00335	)	Washington, D.C.
IA Filed: 20 October 1999	)	
U.S. App. No.: (Not Yet Assigned)	)	June 20, 2000
National Filing Date: (Not Yet Received)	)	
For: DOOR MODULE	)	Docket No.: GARCIAMARTIN=1

PRELIMINARY AMENDMENT

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

Contemporaneous with the filing of this case and prior to calculation of the filing fee, kindly amend as follows:

IN THE SPECIFICATION

After the title please insert the following paragraph:

--CROSS REFERENCE TO RELATED APPLICATION

The present application is the national stage under 35 U.S.C. 371 of PCT/ES99/00335, filed 20 October 1999. --

IN THE CLAIMS

Claim 17, line 1, delete "claims 6 and 16", and insert therefor --claim 6--.

If, inadvertently, a proper multiple dependent claim has not been amended to reduce it to single dependency, please amend it to be dependent solely on the first-mentioned claim, or, if that is not possible, please cancel the claim and notify the undersigned.

REMARKS

The above amendments to the claims are being made in order to eliminate multiple dependency and for the purpose of reducing the filing fee. Please enter this amendment prior to calculation of the filing fee in this case.

Favorable consideration and allowance are earnestly solicited.

Respectfully submitted,
BROWDY AND NEIMARK, P.L.L.C.
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EXACT ENGLISH LANGUAGE TRANSLATION OF THE PCT APPLICATION AS ORIGINALLY FILED

"Door module"

This invention relates to a door module for automobile vehicles that, with its particular characteristics, creates appreciable advantages in relation to traditional techniques.

As far as is known, there have been several attempts aimed at constituting door module units for incorporation into the door inner liners of vehicles. In general, these attempts have been limited as regards their concept, which has meant that they have not been practical in their incorporation into these techniques, due to the fact that, among other shortcomings, they required important structural alterations to be carried out during assembly.

One object of this invention is to provide a door module that allows direct assembly onto it of practically all the component items, as well as other items typical of the surroundings, such as catadioptric aerators, compartments or side airbags, for example.

Another object of the invention is to provide a door module which is capable of providing relative movement between the mechanical subsystems, locks and window winders, and the door trim subsystem, with which it makes the process of assembling the unit on the door easier.

Another object of the invention is to provide a door module that rationalises the assembly of the unit and proves more economical that those systems traditionally used up to now.

Another object of the invention is to provide a waterproofing unit that ensures an increase of the waterproof capacity of the trim items.

Another object of the invention is to provide a waterproofing unit that acts as a lower support for the trim or for the door module, thus making the assembly of the unit easier.

Another object of the invention is to provide a waterproofing unit that

effectively prevents water from reaching the weld lines.

A final object of the invention is to provide a waterproofing unit which is robust and effective against tolerances, both in manufacturing and in assembly.

In order to achieve these objectives, the invention proposes the production of a waterproofing unit on a group or association of a door panel and a door inner liner, on which the door trim is later situated, and with this unit being composed of a deflector that protrudes from the door panel itself and is a constituent part of this panel, and below its position and a certain distance from it, two support appendages, also constituent parts of the said panel, and with these two appendages situated a short distance from each other.

To put these objectives into practice, the invention includes a base body or trim, on which the complete subassembly of the window winder, the lock subassembly with the operating cable, the internal opening control, the electric wiring, the waterproofing devices for the system, the internal door pull handle, the loudspeaker, the electrical controls for the window winder and the lock, and the external opening control subassembly are mounted.

As mentioned previously, and apart from these components, other auxiliary items, which are typical of this area, are incorporated into the trim, for instance aerators, compartments, etc.

One outstanding characteristic of the module in the invention is that it enables relative movement between the mechanical systems of the lock and the window winder in relation to the subsystem of the door trim itself, so that the assembly of these items onto the door trim is carried out with a capacity for relative displacement, which allows the prior assembly of the module onto the door inner liner, as well as the completely normal final fixing of the said mechanical subsystems.

The motor for the window winder subsystem can be pressure fitted, either on a metallic or similar support with fixing attachments between one of

the rails of the window winder and the door itself, in accordance with the traditional way of operating, or directly situated onto the door trim without metallic or plastic supports of any type.

In this latter case, the door trim itself supports the motor during the handling and transport stages prior to the final assembly into the vehicle, so that it is fixed directly to the door structure or frame by means of bolts, rivets or similar.

The lock subassembly is placed onto the door trim, and there is always a system in the latter that enables movement of this subassembly. This allows the positioning of the lock onto the door inner liner in such a way that the operation of bolting, riveting or similar of this subassembly to the said door inner liner can be carried out.

This lock subassembly is connected, by means of a mechanical system using wires, rods or similar, to the interior door opening control in such a way that the lock-interior opening control unit is totally positioned on the door module.

On the other hand, and in those cases where the geometry of the door so permits, the connection of the lock with the exterior opening control will be carried out in such a way that the lock-exterior and interior opening wires or rods subassembly is positioned on the door module.

The module will have at least one removable or detachable part, through which access can be obtained to the lock, the window winder motor and the upper window winder system. This removable part is fixed to the rest of the trim by means of clips or similar items.

The invention also proposes that this removable part can be secured to the rest of the trim by means of a hinged area that facilitates the opening and later closing of the part.

One variant of the module includes a window winder with its kinematic

chain and drive systems, the lock together with the interior handle and the corresponding drive wires, as well as an intermediate base of ribbed steel plate, which carries out the function of reinforcing and supporting the unit.

Moreover, it incorporates all the trim and the corresponding auxiliary items, side compartments, bosses, loudspeaker grille, loudspeaker, wiring and drive items for the electrical systems, as well as other devices that might be incorporated in the future.

The window winder supported by the module can be of any type, which is pointed out here for the consequent appropriate purposes.

The lock mounted on the ribbed steel plate is capable of being retracted during assembly, so that it avoids any problematic interference. Therefore, the lock can be made to slide back on the said steel plate in order to be located in its final position for assembly, once that the rest of the module has been assembled onto the door.

Basically, the trim will be made of impermeable waterproof material and will have a waterproof strip or band around the outer surface, so that it creates a closure with the door inner liner itself.

It will also have sealing gaskets at all the connections between the different components, in order to impede the passage of moisture and dust that might enter the interior of the passenger compartment through the door inner liner.

The module unit or assembly is fixed to the door in two stages, following, in the first instance, the guidelines laid down in WO-A-99/25587. In the first stage, the assembly is carried out with a vertical downward movement, which permits fast fixing systems to be used.

In the second stage, the supports for the rails are bolted to those for the steel plate and for the lock, taking into account that the connection between the rails and the trim is such that the latter also becomes secured by the same bolts

as the rails.

In this case, the trim will also have at least one central boss, which is removable so that it allows access for the bolting together of the rails and the support, as well as for other operations, such as the correct final positioning of the lock, the connection of the exterior opening handle and the drive cable, the connection and adjustment of the window pane with window winder system and the assembly of the electrical connectors.

On the other hand, it is pointed out for the appropriate purposes that the assembly of the trim and the other items can be dismantled from the door with great ease, so that it permits later repair operations to be carried out.

The ribbed plate by way of a metallic reinforcement can take the form of a variant with an approximately "X" shape, which will also be provided with a prolongation in order to incorporate the lock unit in the same way as described previously.

In accordance with this variant, three functions can be fulfilled:

- One of these is the support function, during transport, of the items that it is composed of.

- A second function is as a support for the window winder system throughout the whole of the working life of the vehicle.

- A third function is as a structural reinforcement for the door inner liner itself, which contributes to its rigidity by improving the performance against side impact of the whole door. This is very desirable, as the door inner liner will have been weakened by the fact of requiring the assembly of the module.

In accordance with this variant configuration, the reinforcing part is secured to the door inner liner by means of four bolt- or screw-fitted connections, which will correspond with the four ends of the "X" shape of the

ribbed plate. The two upper connections will be supported on the upper part of the door and the two lower ones on the part close to the lower edge of the door inner liner.

The window winder system, in this case, will be fixed to the ribbed plate, spot-welded, riveted or bolted (screwed). This connection also fulfils the function of supporting the window winder system on the X-shaped support, not only during the transport and handling of the module until it is assembled on the door, but also during the working life of the vehicle.

Within this same line, it is also pointed out that the X-shaped plate will make it possible to obtain, in the production process by press forming, two edges along which the drive slides of the window winder would move. In this way, it would achieve the integration of the rails of a double rail window winder in one single multifunctional part.

Within the general context of the module that includes the reinforcing ribbed plate, it is pointed out that the window winder supported by the module can be either manually or electrically operated and use either single or double rail systems, with mechanical arms or "sirga", all of which can be used in any of their possible variants.

In order to implement the watertightness, also an objective of the present invention, it is proposed that a waterproof set should be made of the unit or association of a door panel and a door inner liner, onto which the door trim is later situated, with this set being composed of a deflector protruding from door panel itself and is a constituent part of this panel and below its position and a certain distance from it, two support appendages, also constituent parts of the said panel, and with these two appendages situated a short distance from each other.

The deflector acts as a support base for a sheet of foam or elastic material adhered, for example, to the lower side of this deflector, with the deflector-sheet unit becoming established in a continuous manner, supported on a projection in the interior of the door inner liner arranged on the door panel and in at least the lower area of the said door inner liner.

Below the above-mentioned projection, the door inner liner includes two drain holes at different levels arranged at regular intervals in the low area of the door inner liner, with these holes being contained in a flat area of the door inner liner at a certain distance from the free ends of the previously mentioned appendages that come from the door panel.

A continuous rubber or foam profile is arranged between the two appendages from the panel, housed and secured in the space between the said appendages and clamped in turn around one of them in order to make its position effective. The profile is provided with two protruding ends that are supported on the side of the door inner liner, just below the two levels at which the drain holes are made, thus achieving a duplicate solution with these two lines of waterproofing, in that each support surface therefore defines a line of waterproofing on which there are drain holes.

With this assembly, perfect watertightness is achieved, with the particularity that the internal deflector-sheet unit can act as the lower support for the door trim or door module, thus making assembly easier.

One variant of the unit in the invention consists of the possibility of replacing the waterproofing profile mentioned with a strip or band of adhesive or similar, situated between the free ends of the two appendages and the surface of the door inner liner.

If the door trim or door module to be situated requires the fitting of bolts or screws at any point of the waterproofing perimeter, a metallic rivet is provided, with which it is possible to ensure the tightening torque of the bolt or screw without deforming the plastic part.

Another detail of the waterproofing consists of providing the deflector with an approximately centred portion by way of a drain channel, directed downwards, with the surface of the deflector, on both sides of the channel, being inclined so that the said channel occupies the lowest position. In this way, it prevents any type of water condensation from becoming deposited in liquid

form on the deflector and providing it with a possible outlet towards the door inner liner, through, for example, a hole made in the said door inner liner that sends the liquid towards the bottom of the door inner liner, where it is evacuated towards the area for damp where the conventional holes are made for water to run out.

On arranging the module in the door inner liner, it will incorporate this perimetric waterproofing system into the one described.

The waterproofing of the removable area can be carried out in different ways: by means of the use of surfaces provided with foam, placed over the rear part of the removable area, that prevent the entry of water into the interior of the passenger compartment; by means of rubber seals or similar, or by means of other similar systems.

As stated previously, the module becomes secured to the door by means of fixing appendages similar to those used by WO-A-99/25587, as well as by the upper window bead or weather-strip and the different bolts or screws of the several mechanical subsystems.

The door required for this modular system to be adopted will have a conventional structure with two large gaps or hollows to allow the insertion of the mechanical systems.

The unit in the invention will be observed in greater detail in the accompanying sheets of drawings, on which it is represented as follows:

- Figure 1 is an elevation of the door module in accordance with the invention, seen on the side on which the different units are arranged.

- Figure 2 represents the elevation of the module from the other side that accedes to the interior of the vehicle.

- Figures 3 and 4 represent the possible movements of the lock, in which Figure 3 shows the final position and Figure 4 shows the initial or transport

position.

- Figures 5 and 6 are a solution for the sliding between the window winder subsystem and the trim itself.

- Figure 7 is a diagrammatic representation that shows the hollows or gaps and the auxiliary portion of the trim hinged to the base.

- Figure 8 is also a diagrammatic representation of the door inner liner in which the module of the invention will be fixed.

- Figure 9 represents the variant of the door module.

- Figure 10 shows the mechanical unit in Figure 9

- Figure 11 makes it possible to observe the main components separated from the door module.

- Figure 12 represents the fixing points for the trim, in a rear view of the same.

- Figure 13 is a detail of the movements for the assembly of the fixing items for the trim onto the door.

- Figure 14 shows the boss and the trim, seen from the visible side of both.

- Figure 15 is a detail of the retractable lock system and its movement on the base plate.

- Figure 16 is a cross section elevation that shows the waterproofing unit in a preferred solution.

- Figure 17 represents the variant of the previous figure when the use of some type of bolt or screw is required.

- Figure 18 is the detail of the water drain channel of the deflector.

- Figure 19 is a side view corresponding to the cross section I-I in the previous figure.

- Figure 20 is a front view of a door with the trim incorporated, including the waterproofing unit.

- Figure 21 is a replacement variant of the waterproofing unit.

- Figure 22 shows the variant consisting of producing the ribbed reinforcing plate in an "X" shape.

- Figure 23 also represents the variant developed from the previous figure, with the slide edges for the drive slides

In Figure 1, other items such as those mentioned previously which are typical of this area, are not represented, all of which are also assembled on the trim.

Figure 2, the side visible towards the passenger compartment of the vehicle, shows the interior door handle (18), the position of the loudspeaker (7), the motor (13) and the ends of the rails (17) of the window winder.

Both in this Figure 2 and also in Figure 1, we can also appreciate a removable or detachable portion (16) in order to allow access to the different items when the module, having been inserted into the door inner liner, is fixed to it permanently, a point that will be further explained later.

The relative movement between the lock (12) and the interior opening handle, in Figures 3 and 4, makes it possible to appreciate the prior assembly position, Figure 4, in which the lock (12) is to be found on the base (2) mounted on the trim (9) and connected by a Bowden-type cable (11) to the said interior opening handle, whereas once that the prior presentation of the module (9) has

been carried out on the door inner liner by insertion of the appendages (15) in the corresponding holes of the said door inner liner, the operation of the cable (11) enables the lock (12) to be extracted, Figure 3, for its final fixing to the door inner liner.

As far as the window winder subsystem is concerned, it is also mounted in a sliding manner on the trim, Figure 5 and 6, with a solution being appreciated in this respect for this purpose, based on the combination of the lugs (21) fixed to the trim (9) and arranged parallel to each other.

Both lugs are each provided with wide hollows or recesses (22) in which the end of the L-shaped appendage coming from the rail is housed, so that once the rails, are they are mounted in the trim, are provided with some play capability, so that it enables the module with the window winder unit attached to be easily inserted into the gaps in the door inner liner for positioning prior to fixing.

From Figure 7 we can deduce the variant relating to the provision of removable spaces in the module, according to which a hinged portion (23) of the trim (9) is established, which can be equipped with gaps or recesses (24) for access to other parts of the module, with these parts later receiving non-hinged removable elements or otherwise allow access to openings (25').

In accordance with Figure 8, we can appreciate a typical solution for the door inner liner (26), in which the two large gaps or hollows (27, 28) allow sufficient space for the insertion of the rails of the window winder subsystem, and the side gaps or holes (29) for the hanging of the module by means of the insertion of the appendages (15) into them.

In accordance with Figure 9, we can appreciate the unit composed of the trim (9) and the base plate (30) mounted on it, as well as the gap or recess (16) for the boss to be assembled on the edge (34) of the said gap. The window winder can also be observed, mounted on the base plate (30), in this case a double rail system with it wiring, the lugs (31) for connection to the rail supports on the edge of the boss, the pins (A) for fastening the unit onto the

door inner liner and the lock units in its prior or assembly position (12') and final position (12) once that it has been moved.

According to Figure 10, we can see in greater detail the relationship between the base plate (30) and the window winder unit, as well as the two positions (12, 12') of the lock and the parts (32) for fixing the rails to the lugs (32) at the edge of the gap for the boss.

With regard to Figure 12, we highlight the lower fasteners (36), on the trim (9), for the rails (17) of the window winder system and for the trim itself on the door inner liner, the three support parts (35) on the trim itself and the pins (A) for fastening the support or base part onto the trim.

The prior assembly of the trim unit (9), with the different components, onto the door inner liner, is as illustrated in Figure 13. Like this, the trim (9) which is provided with some pins (A) and also has an upper portion (D), which is folded or bent down, is situated opposite the inner skin or face (36) of the door inner liner, which in turn is provided with the recess (B), until it is made to frontally approach the said skin or face.

The trim is raised until the upper portion (D) reaches the upper end © of the skin, so that the upper fitting (C, D) takes place, and also the insertion and corresponding lodging of the pins (A) in the recess (B) in the skin.

Figure 11 shows us the majority of the main components of the modular unit, with the trim (9) and with its opening (16) for the fitting of the boss, and in which the lugs (31) can be seen at the edge (34) of the said opening. This trim also includes a loudspeaker (7) and the side pocket or compartment.

Also illustrated is the window winder unit, the ribbed base plate (30), as well as the wiring layout (33) required for the correct operation of the mechanisms and the lock unit (12).

With respect to Figure 14, we can observe the visible side of the trim (9) with the gap or opening (16) for the boss, in which the interior door opening

control has been drawn. This control, among others, can form part of the door module, as already stated earlier.

Figure 15 shows a formal solution for the ribbed base plate (30), on which the lock (12) is situated, drawn back inside the perimetric interior of the part in order to facilitate the assembly of the module.

As mentioned previously, the opening for the boss will facilitate the access needed for the assembly of the different items, fixing operations, etc., so that when all the components have been placed and are in an operative position, the boss is placed, closing the opening.

As can be deduced from Figures 9 to 12, it must be pointed out that the connection between the rails (17) of the window winder and the trim (9) is such that the latter is also secured by the same bolts or screws as used for the rails.

The window winder which is fitted can also be manually operated and the use of the double rail system is also admissible. In this case, and given that, as there are two drive slides there is sufficient connection with the window pane, the extensions of the window pane guides towards the interior of the door inner liner are not necessary, with which the assembly of the unit is made easier.

In the case of door inner liners of a certain considerable size, there are usually no problems of space for the perfect fitting of the unit when double rail window winders are used. However, in other cases of smaller door inner liners, problems might arise for the appropriate location of the window winder rails.

In order to completely avoid these disadvantages, it is proposed that open gaps be made in the lower horizontal surface of the door inner liner, so that the ends of the rails can clear this lower area without greater problems.

As can be deduced from Figure 22, we can appreciate the variant for the ribbed reinforcing plate with an approximately "X" shape (52), which also includes the lock (12) and the rails (17) of the window winder, secured to the

said plate by means of the connections (51).

The reinforcing part (52) remains secured to the door inner liner (26) by means of the bolted or screwed connection (53) that correspond with the four ends of the "X" shape. The two upper ones are supported, as can be seen, on the upper part of the door (26) and the two lower ones on the lower part.

In Figure 23, we illustrate the variant of Figure 22, according to which the X-shaped ribbed plate is formed and is provided with longitudinal edges (55) along which the drive slides of the window winder system would travel, and in which the wiring, pulleys of this system are also shown. The points (53) will in this case be the points at which the plate is fixed to the door.

In accordance with Figure 16, we can see the door panel (9) and the door inner liner (26) arranged close to each other. Standing out from the door panel are the deflector (37) and the appendages (40) below it. The lower side of the deflector holds the foam (38) that rests on the projection on the edge of the door inner liner (26) while the appendages receive the profile (39). The ends (41, 42) of this profile rest on the surface of the door inner liner, just below the two drain holes (43, 44) cut in the door inner liner itself.

In the plan view shown in Figure 20, we can observe the route or path of the deflector (37) with the support area for the foam gasket in the lower area of the door (26) and the arrangement of the two rows of drain holes, upper (43) and lower (44), in relation to which the path of the profile (39) also runs, as well as the arrangement of the door inner liner (26).

With reference to Figure 21, we can appreciate the variant of the invention, according to which the profile arranged between the appendages (40) of the door panel (9) is replaced by a bead or line of adhesive (49) between the ends of the appendages and the door inner liner (26)

In accordance with Figure 17, we highlight the detail of the bolted or screwed area between the door panel and the door inner liner, in which a metal bush or socket (46) is placed, inside which the bolt or screw (47) can be secured

with a tightening torque without deforming the parts.

With reference to Figures 18 and 19, we point out the detail of the water drain that could possibly be made on the deflector (37), by making the said deflector with an outward and downward inclined channel (50), which is directed towards the door inner liner (26). This channel will occupy such a position that the paths of the adjacent sections of the deflector are inclined upward so that the water is directed towards the said channel by gravity.

The channel (50) directs the water towards the door inner liner (26), which is the damp area of the assembly, for example through a hole in the body of the said door inner liner that leads the water towards its base, where it is drained to the exterior through the conventional holes that these kind of items are provided with.

CLAIMS

1.- Door module, applicable to automobile vehicles, that has a door trim panel (9), a complete window winder subassembly (1), a lock subassembly (3, 10, 12) with its operating cables and controls for these drive operations, electric controls (8) for the said subassemblies, a loudspeaker (7), a motor for the window winder subassembly and other conventional items for units of this type, while also being equipped with the necessary appropriate waterproofing items, all in combination with a door inner liner (26) that receives all the items mentioned and which is characterised by,

- a door trim panel (9) in which the complete window winder subassembly (1) with its wiring (14), rails (17) and motor (13); the lock subassembly (3, 10, 12) with the corresponding cables (14); the handles of these locks; the general electrical wiring (4) and its controls; and the loudspeaker (7), are mounted previously, forming one unit,

- the mechanical subassemblies of the window winder and the lock are provided with relative movement in relation to the trim (9) before the assembly of the unit to the door,

- the trim (9) is provided with at least one portion (22), which is partially removable or detachable, also at least, in relation to the trim itself, and which when it is assembled covers at least an opening in the trim,

- a lower deflector (37) of the panel of the door trim (9) which is situated on an upper edge of an also lower portion of the door inner liner (26), with a portion of elastic, foam type material or similar, below the said deflector, with two support appendages (41, 42) which also protrude from the door panel, that procure a space between the two and whose ends are directed towards the door inner liner (26) in the area between the said door inner liner and the said panel, and situating a profile (39) made of rubber, foam or similar material in the space mentioned, with this profile having two ends (43, 44) that project towards the door inner liner at different heights, forming two lines of waterproofing on which there are the previously mentioned drain holes that define these lines of

waterproofing, in that the both the deflector and the lower elastic portion connected to this deflector , the two support appendages and the profile between these appendages, form continuous lines between the door panel and the door inner liner.

2.- Door module, in accordance with claim 1, characterised in that the trim subassembly is provided with pairs of protruding lugs (21) with holes (22) in them, in which the fins (20) of the L-shaped appendages (19) secured to the window winder rails fit loosely, in order to maintain the said rails on board the trim for its transport and until its final fixing into the door inner liner.

3.- Door module, in accordance with claim 1, characterised in that the lock (12) is connected to the interior opening control (3) by some kind of means (11), cable or wire, rod or similar, that modifies its position on board the trim from that of its transport position, on the trim, to that of assembly on the door inner liner, outside the trim.

4.- Door module, in accordance with claim 1, characterised in that the lock (12) can be connected to the external opening control by means of cable or rods.

5.- Door module, in accordance with claim 1, characterised in that the module has a portion (23) of the trim (9) subassembly, which is hinged to it and which covers, when it is assembled, at least an opening made in the said trim in order to have access to the fixing of the different items to the door inner liner.

6.- Door module, in accordance with claim 1, characterised in that it has a trim (9) provided with a waterproofing bead or line around all its outer peripheral area, that acts as a seal for the door inner liner itself, with this trim being equipped with at least one wide central removable or detachable boss (16) capable of allowing access for the unit to be bolted or screwed to the door inner liner and other assembly operations, following the prior assembly on this trim of a window winder with its kinematic chains and drive items, the lock (12) with its interior control handle and the cables for its operation, on an intermediate base plate made of ribbed sheet steel (30) acting as a reinforcement

and support for the assembly to which the lock, in turn is attached, and including, apart from the trim, all the accessories associated with it, such as the side pockets or compartments, the loudspeaker grille, the loudspeaker, the wiring and drive units for the electrical systems, while also being able to include any other items, with the trim having sealing gaskets or joints at all the connections between the different components, and in that the trim is secured to the door inner liner by the same bolts or screws that fasten the rails to the trim itself.

7.- Door module, in accordance with claim 6, characterised in that lock (12) which is attached to the reinforcing base plate (30) slides on the latter in order to reach its final assembly position on the door once the rest of the module has been assembled to the said door.

8.- Door module, in accordance with claim 1, characterised in that the window winder unit which is included can have either a manual or an electrical drive system.

9.- Door module, in accordance with claim 1, characterised in that either a single or a double rail can be used for the window winder, doing away with the prolongation or extension of the window pane guides towards the interior of the door inner liner in the case of the double rail.

10.- Door module, in accordance with claim 1, characterised in that the deflector-lower elastic portion unit is capable of acting as the lower support for the trim or door module.

11.- Door module, in accordance with claim 1, characterised in that the waterproofing profile situated between the support appendages is replaced by a longitudinal bead or strip of adhesive between the ends of the said appendages and the door inner liner.

12.- Door module, in accordance with claim 1, characterised in that when the door trim or door module requires the use of bolts or screws at any point of the waterproofing perimeter, at least one metallic rivet is placed

between the door inner liner and the door panel, together with the bolts or screws.

13.- Door module, in accordance with claim 1, characterised in that the deflector (37) has two inclined slopes in relation to the horizontal, that come together at a lower common meeting point in a protruding channel (50) that extends downwards and towards the door inner liner (26), possibly passing through a hole in the said door inner liner above its base for the draining of water towards this said base.

14.- Door module, in accordance with claim 1, characterised in that the motor (13) for the window winder system is positioned on the door trim (9), during transport, for later fixing to the door.

15.- Door module, in accordance with claim 1, characterised in that the motor (13) for the window winder system is positioned on the door trim (9) as its final and definite location.

16.- Door module, in accordance with claim 6, characterised in that the ribbed reinforcing plate (52) has an approximately "X" shape and it is fixed to the door inner liner (26) by its four ends, two on the upper part and the other two on the lower, and in that the window winder system (17) is fixed to this said plate (52) at the points (51) .

17.- Door module, in accordance with claims 6 and 16, characterised in that the ribbed reinforcing plate (54) has two parallel longitudinal sides (56) on which two edges (55) are formed, with these edges each being capable of allowing the incorporation of drive slides, integrating into one single multifunctional part all the components of a double rail window winder and fixing it to the door inner liner at the points (53).

"DOOR MODULE"

ABSTRACT

A door module, with a trim (9) on which practically all the component items are mounted or assembled, mechanical subassemblies of the lock and the window winder, wiring, etc. with a relative sliding movement between the mechanical subassemblies and the trim, facilitating assembly in the door. The trim includes openings for access to the fixing points for the different items in the door inner liner, as well as a system of waterproofing against moisture.

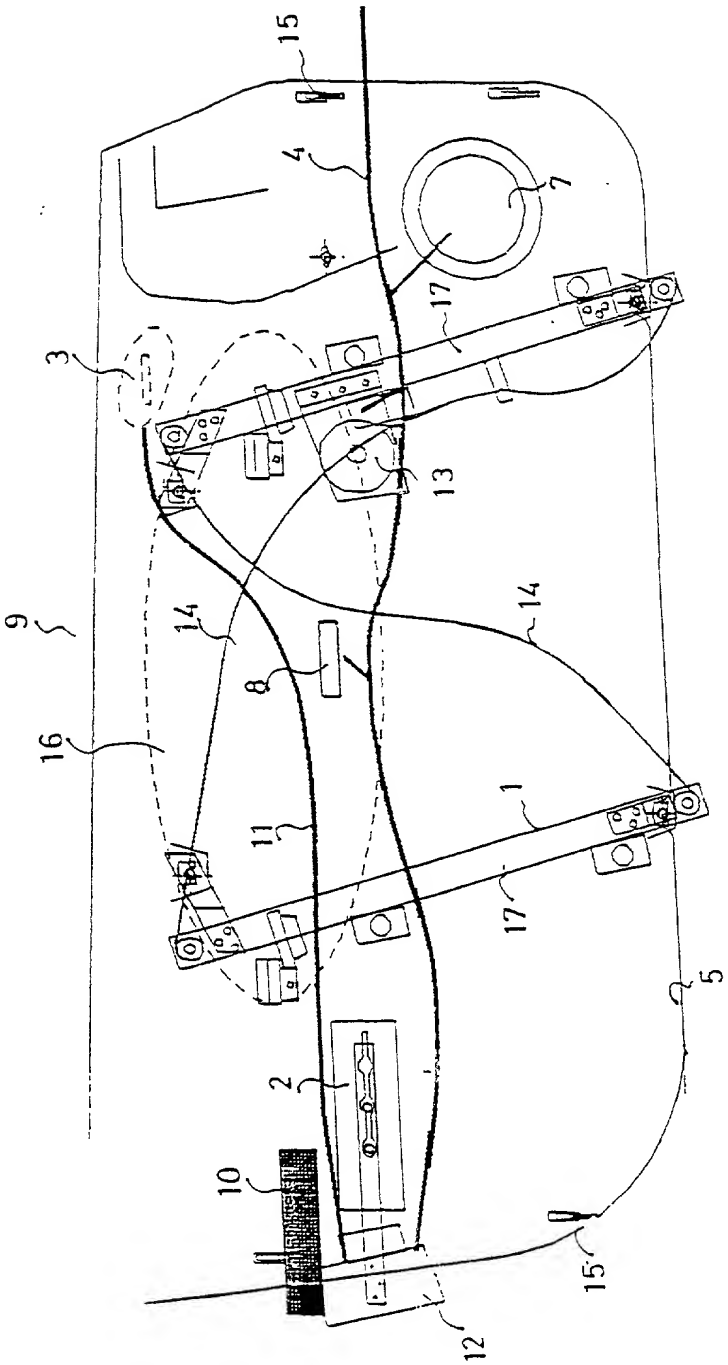


Fig:1

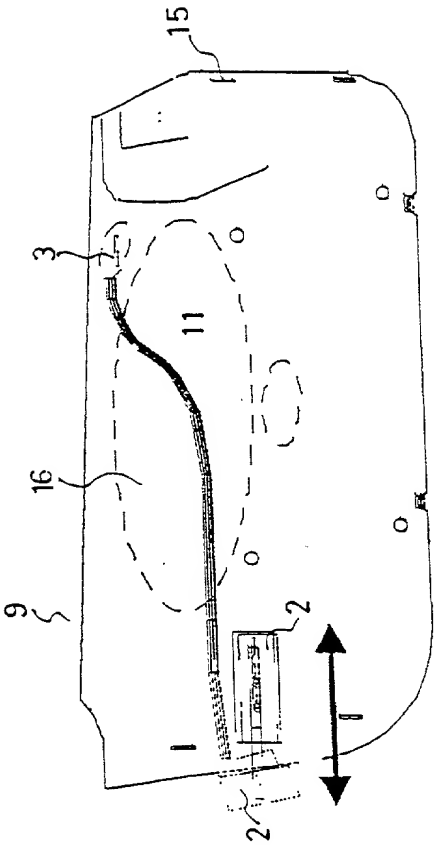


Fig:3

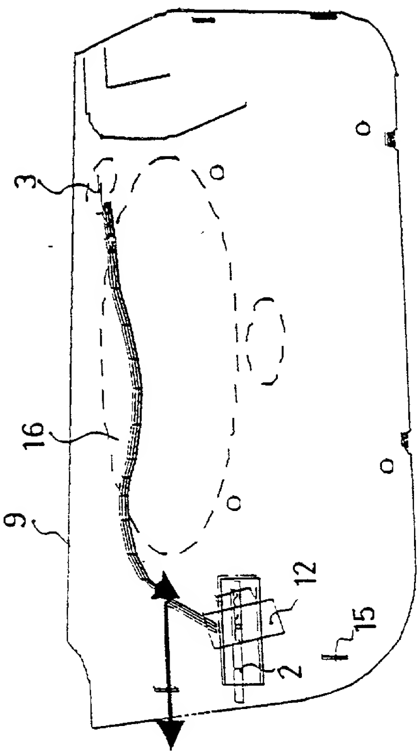


Fig:4

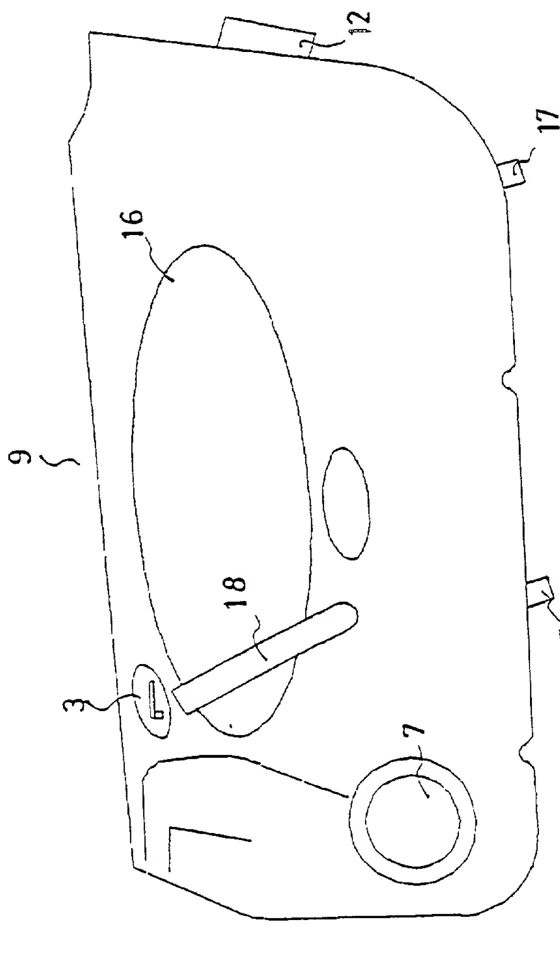


Fig:2

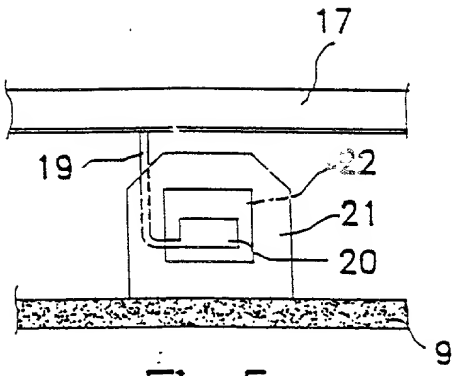
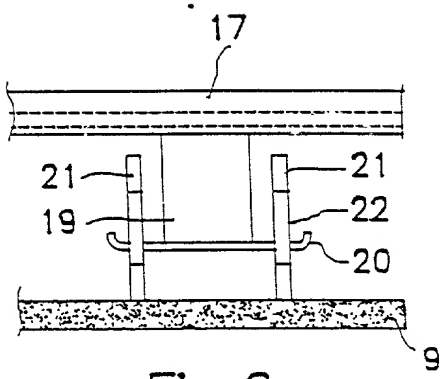


Fig:5



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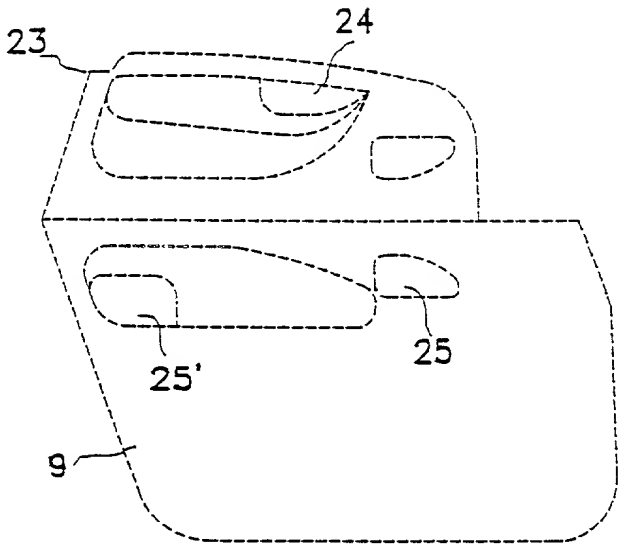

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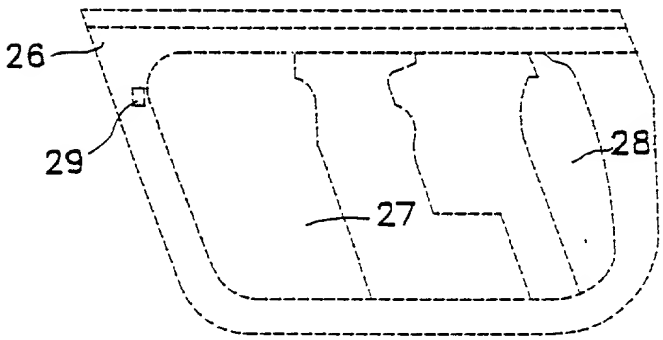

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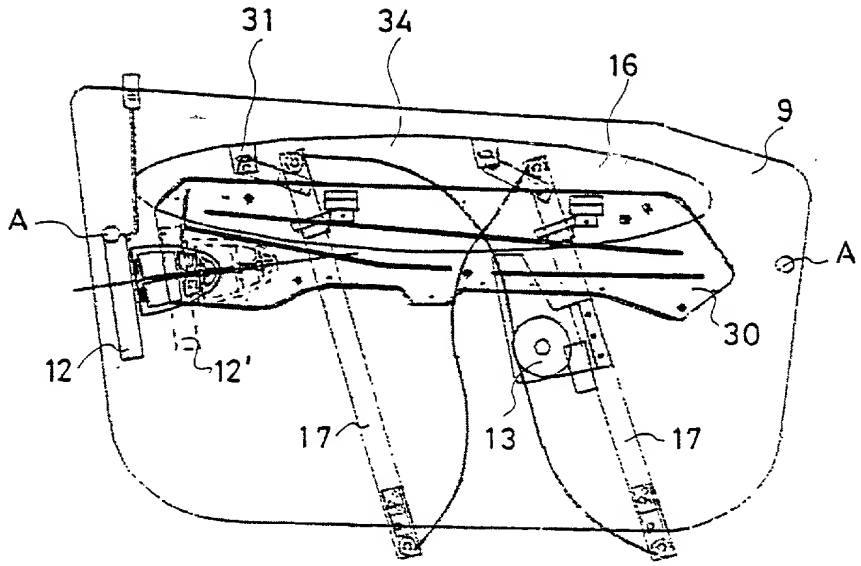

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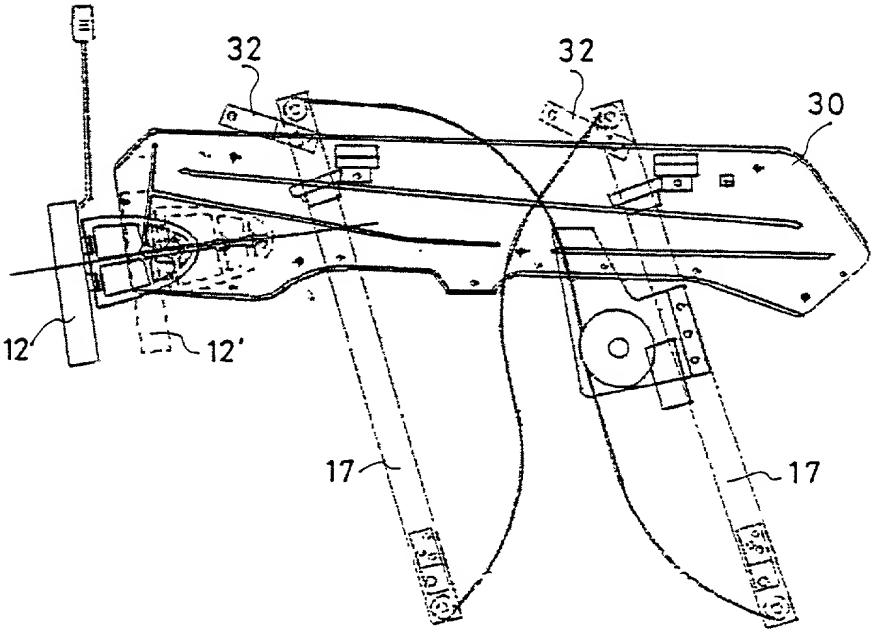

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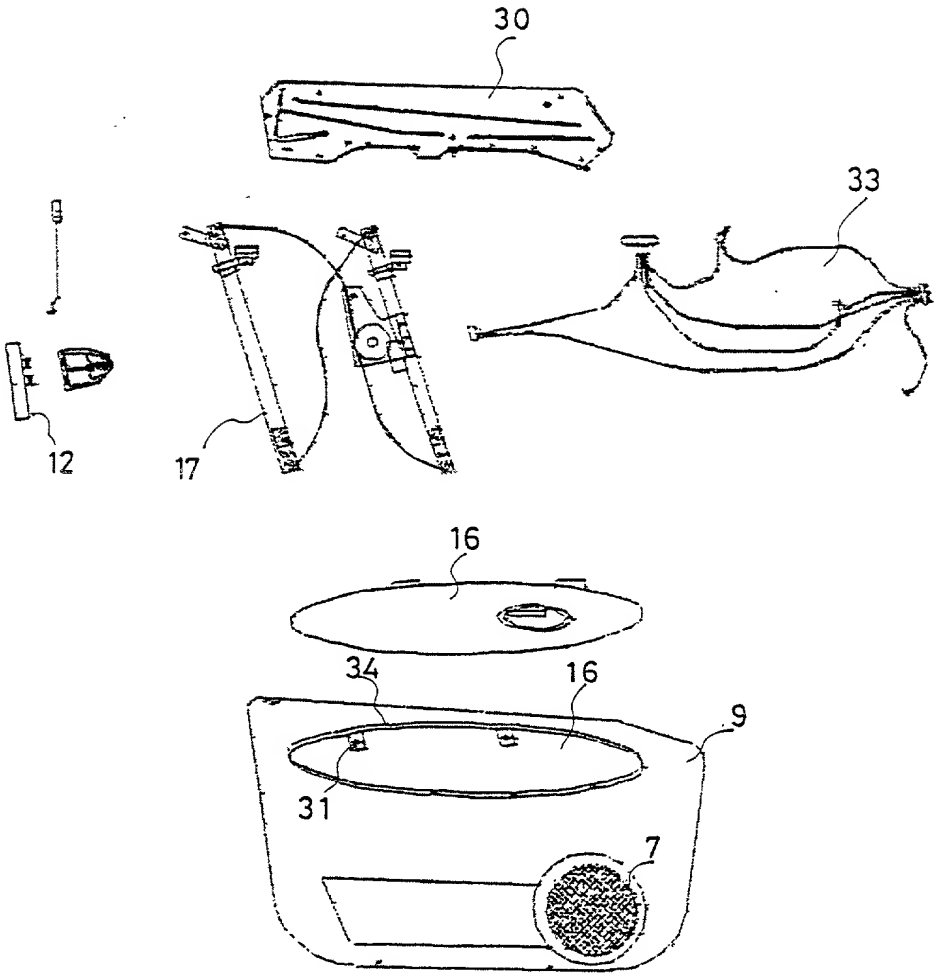

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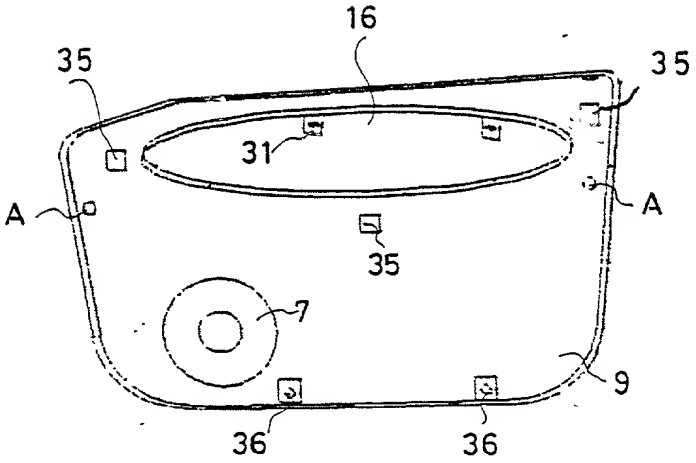

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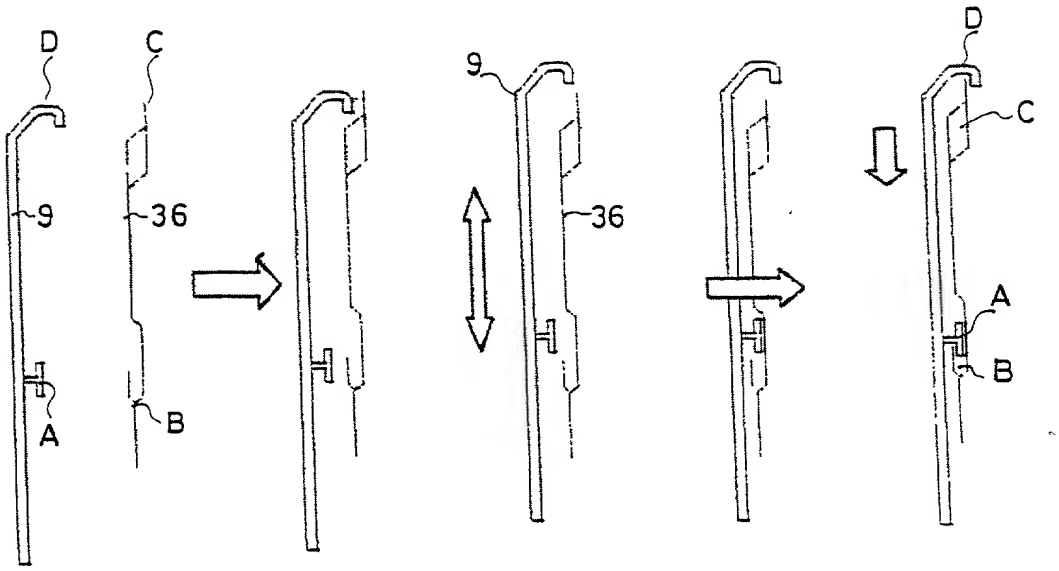

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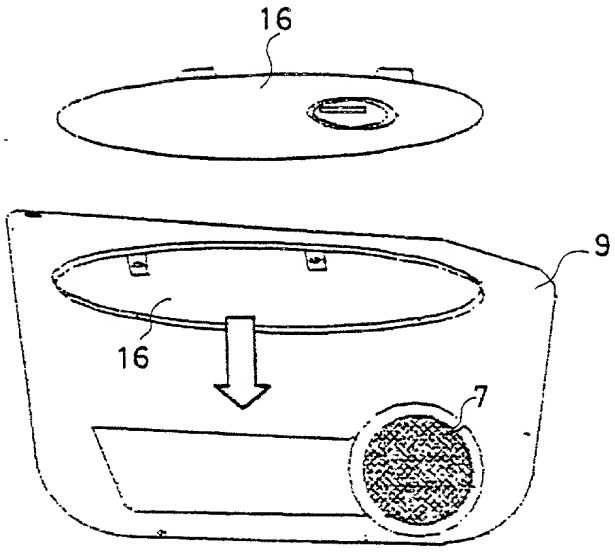

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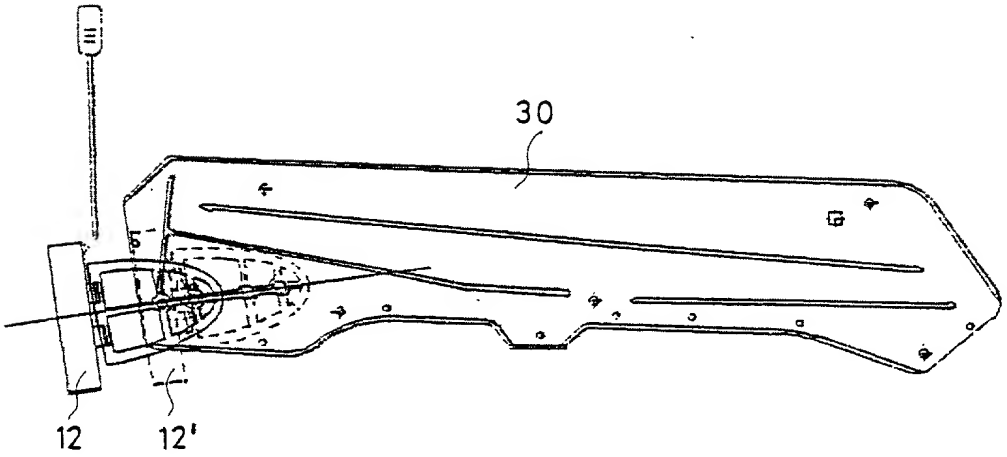


Fig:15

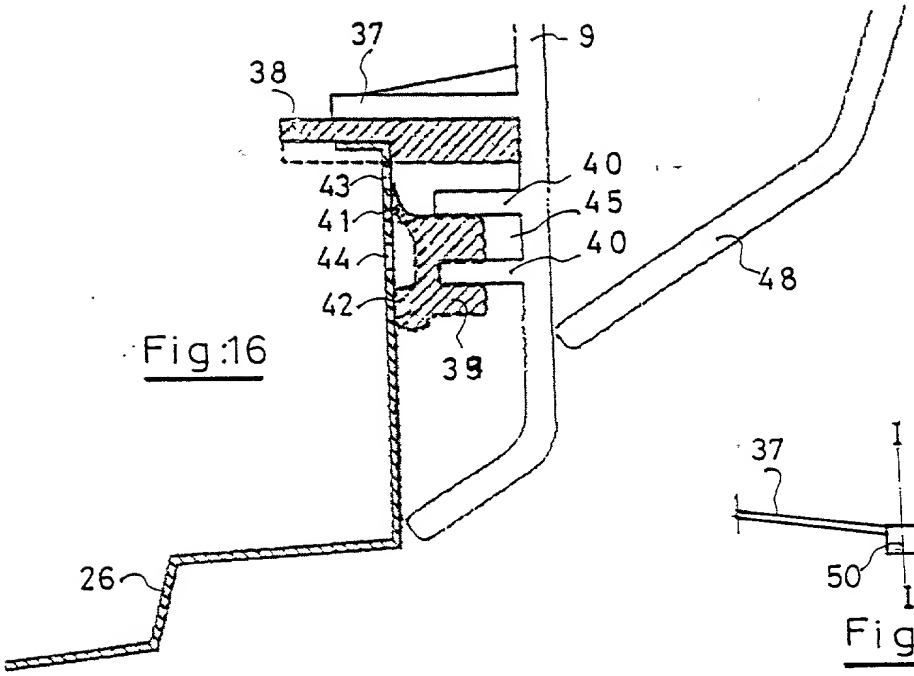
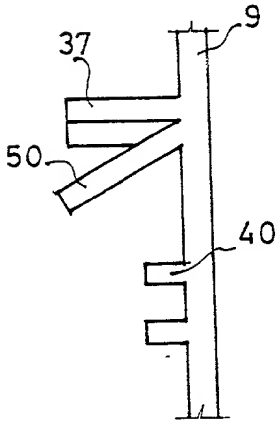


Fig:16

Fig:18



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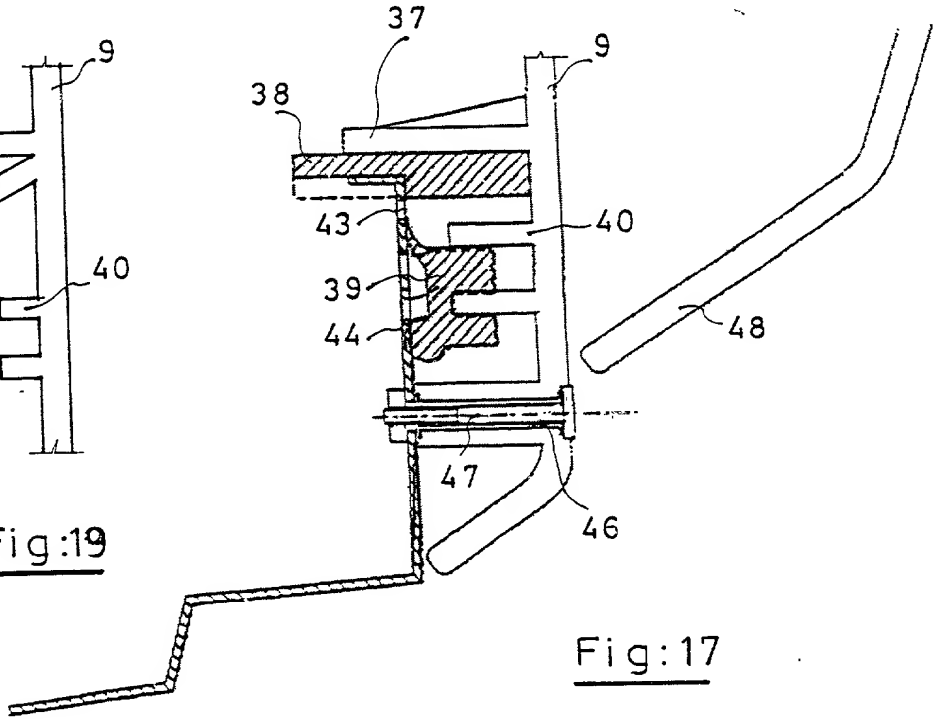
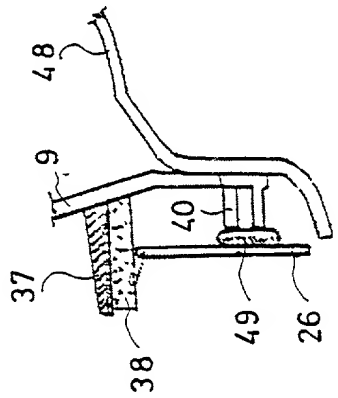


Fig:17



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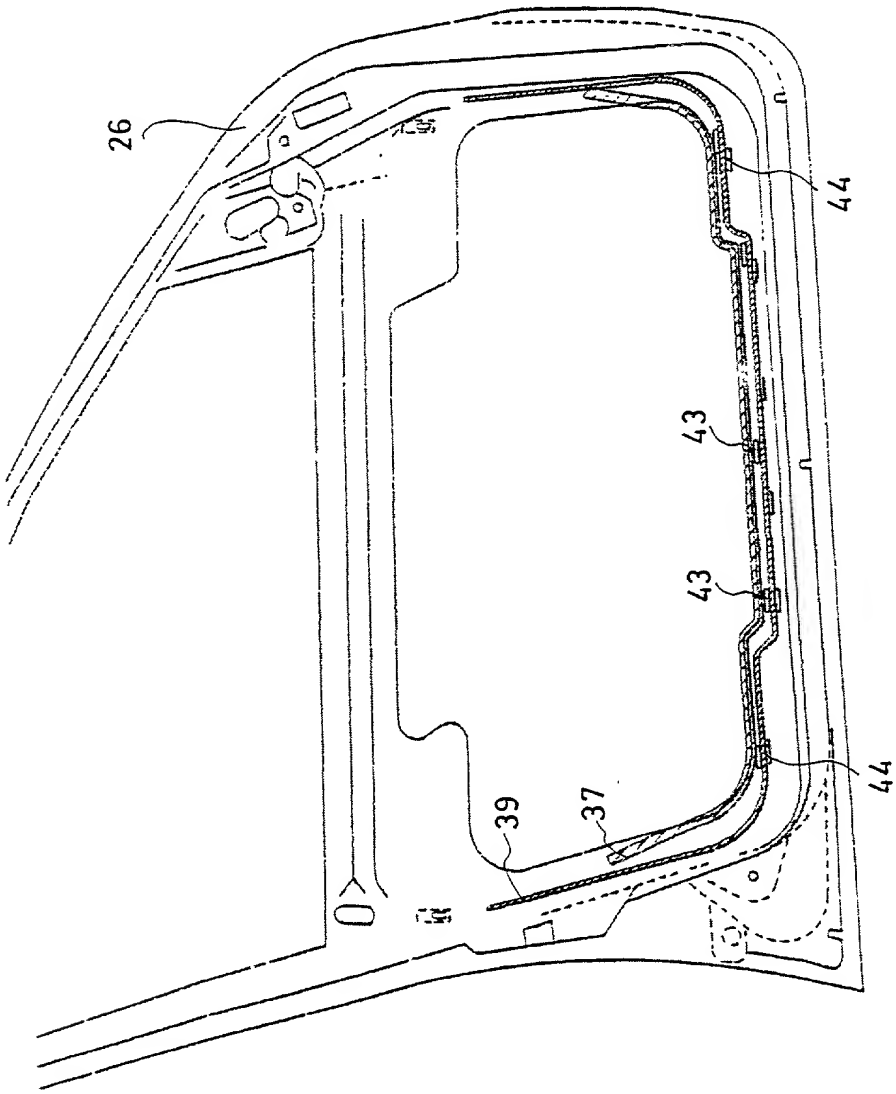

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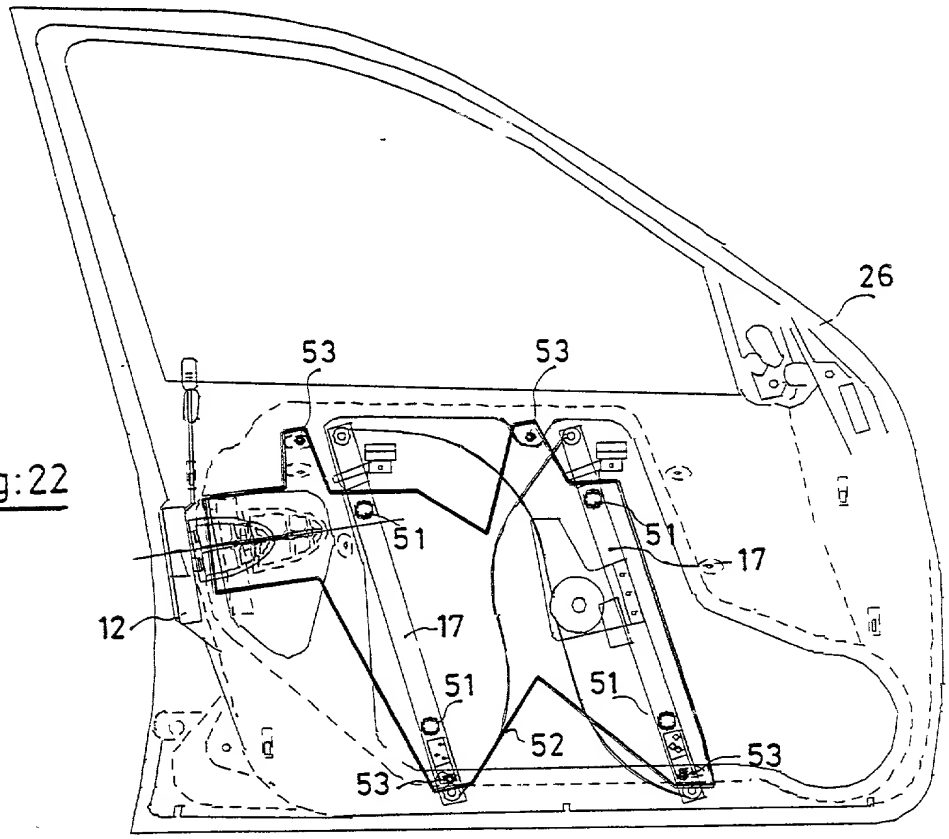

Fig:22

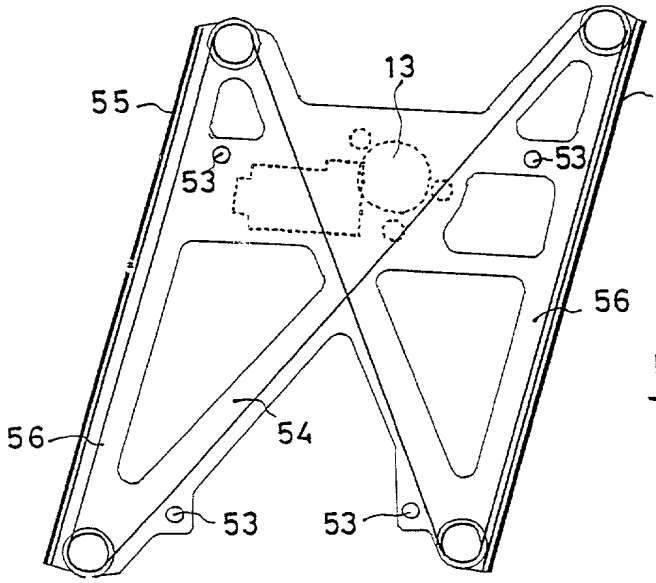

Fig:23

Page 1 of 2 Pages [x] Original [ ] Supplemental Atty. Docket: GARCIA MARTIN-1

Combined Declaration for Patent Application and Power of Attorney

As a below-named inventor, I hereby declare that:
My residence, post office address and citizenship are as stated below next to my name; and that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled
DOOR MODULE
the specification of which (check one)

[ ] is attached hereto;
[ ] was filed in the United States under 35 U.S.C. §111 on _ _____, as U.S. Appln. No. _____*; or
[X] was/will be filed in the U.S. under 35 U.S.C. §371 by entry into the U.S. national stage of an international (PCT) application, PCT/ES99/00335; filed 20 October 1999, entry requested on _____ _____*; national stage application received U.S. Appln. No. _____*; §371/§102(c) date _____ _____* (* if known)

and was amended on _____ (if applicable).
(include dates of amendments under PCT Art. 19 and 34 if PCT)

I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above; and I acknowledge the duty to disclose to the Patent and Trademark Office (PTO) all information known by me to be material to patentability as defined in 37 C.F.R. §1.56.
I hereby claim foreign priority benefits under 35 U.S.C. §§ 119 and 365 of any prior foreign application(s) for patent or inventor's certificate, or prior PCT application(s) designating a country other than the U.S., listed below with the "Yes" box checked and have also identified below any such application having a filing date before that of the application on which priority is claimed:

P 98 02184	SPAIN	20 October 1998	[x]	[]
(Number)	(Country)	(Day Month Year Filed)	YES	NO
P 99 00184	SPAIN	29 January 1999	[x]	[]
(Number)	(Country)	(Day Month Year Filed	YES	NO
P 99 01808	SPAIN	6 August 1999	[x]	[]
(Number)	(Country)	(Day Month Year Filed)	YES	NO

I hereby claim the benefit under 35 U.S.C. §120 of any prior U.S. non-provisional application(s) or prior PCT application(s) designating the U.S. listed below, or under §119(e) of any prior U.S. provisional applications listed below, and, insofar as the subject matter of each of the claims of this application is not disclosed in such U.S. or PCT application in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose to the PTO all information as defined in 37 C.F.R. §1.56(a) which occurred between the filing date of the prior application and the national filing date of this application:

(Application No.)	(Day Month Year Filed)	(Status: patented, pending, abandoned)
(Application No.)	(Day Month Year Filed)	(Status: patented, pending, abandoned)
(Application No.)	(Day Month Year Filed)	(Status: patented, pending, abandoned)

As a named inventor, I hereby appoint the following registered practioners to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

All of the practioners associated with Customer Number 001444
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The undersigned hereby authorizes the U.S. Attorneys or Agents appointed herein to accept and follow instructions from OCHANDIANO & MOLINA, as to any action to be taken in the U.S. Patent and Trademark Office regarding this application without direct communication between the U.S. Attorneys or Agents and the undersigned. In the event of a change of the persons from whom instructions may be taken, the U.S. Attorneys or Agents appointed herein will be so notified by the undersigned.

Page 2 of 2 Pages Atty. Docket: GARCIA MARTIN=1
Title: DOOR MODULE
U.S. Application filed _____, Serial No. _____
PCT Application filed 20 October 1999, Serial No. PCT/ES99/00335

I hereby further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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FULL NAME OF SEVENTH JOINT INVENTOR	INVENTOR'S SIGNATURE	DATE
RESIDENT	CITIZENSHIP	
POST OFFICE ADDRESS		

ALL INVENTORS MUST REVIEW APPLICATION AND DECLARATION BEFORE SIGNING. ALL ALTERATIONS MUST BE INITIALED AND DATED BY ALL INVENTORS PRIOR TO EXECUTION. NO ALTERATIONS CAN BE MADE AFTER THE DECLARATION IS SIGNED. ALL PAGES OF DECLARATION MUST BE SEEN BY ALL INVENTORS.